

COPY



100 GROVE ST. | WORCESTER, MA 01605

November 11, 2019

Joseph Laydon
Town Planner
Grafton Municipal Center
30 Providence Road
Grafton, MA 01519

EXHIBIT 26

T 508-856-0321

F 508-856-0357

gravesengineering.com

RECEIVED

**Subject: North Street Subdivision
Preliminary Plan and MRDSP Review**

NOV 12 2019

Dear Joe:

PLANNING BOARD
GRAFTON, MA

We received the following documents in our office August 12, 2019:

- Correspondence from Connorstone Engineering, Inc. to Grafton Planning Board dated August 7, 2019, re: Preliminary Subdivision Application, Flexible Development Special Permit Application, North Street, Grafton, MA with enclosures.
- Conventional development plans entitled Preliminary Plan of North Street Subdivision, Grafton, MA dated June 19, 2019, prepared by Connorstone Consulting Civil Engineers and Land Surveyors for Circle Assets, LLC. (9 sheets)
- Plans entitled Flexible Development of North Street Subdivision, Grafton, MA dated June 19, 2019, prepared by Connorstone Consulting Civil Engineers and Land Surveyors for Circle Assets, LLC. (9 sheets)

We also received the following documents on September 6, 2019:

- Correspondence from Connorstone Engineering, Inc. to Grafton Planning Department dated August 29, 2019, re: North Street Subdivision, Circle Assets, LLC with attached document entitled Requested Waiver Considerations to the Planning Board also dated August 29, 2019.
- Conventional development plans entitled Preliminary Plan of North Street Subdivision, Grafton, MA dated June 19, 2019 and revised August 30, 2019, prepared by Connorstone Consulting Civil Engineers and Land Surveyors for Circle Assets, LLC. (9 sheets)
- Plan entitled Land Use Site Plan, Flexible Development of North Street Subdivision, Grafton, MA dated June 19, 2019 and revised August 21, 2019, prepared by Connorstone Consulting Civil Engineers and Land Surveyors for Circle Assets, LLC.

Graves Engineering, Inc. (GEI) has been requested to review and comment on the plans' conformance with applicable "Rules and Regulations Governing the Subdivision of Land; Grafton, Massachusetts" revised through April 27, 2009; "Grafton Zoning By-Law" amended through October 15, 2018 and standard engineering practices. As part of this review, GEI visited the site on November 7, 2019.

x:\shared\projects\graftonpb\northstreetsubdivision\docs\reviews\j111119nssprelim.doc

Our comments follow:

Zoning By-Law

Both Conventional and Flexible Development Plans

1. The Existing Conditions Plan of the Conventional Development Plans does not include the applicant's information, and on Sheets 1 through 3 of the Flexible Development Plans the applicant is labeled as "Owner." The plans should be revised to consistently identify the applicant and the applicant's address. (§1.3.3.3.d.9)
2. A traffic study that addresses the estimated number of vehicle trips and anticipated impacts to area roads/intersections was not submitted. If a traffic study is to be submitted, it is our understanding the study may be reviewed by a traffic consultant for the Town of Grafton. GEI defers to the Planning Board whether a traffic study needs to be submitted as part of this Major Residential Special Permit application or at the time of filing a definitive subdivision plan. (§8.2 & SR&R §3.3.4.7)

Flexible Development Plans

3. The Flexible Development Plans propose five lots more than the 32 lots proposed on the Conventional Development Plans, an increase of 15.6% or 16% when rounded to a whole number. An increase in dwelling units of only 15% is permitted. The design engineer claimed that the Flexible Development Plans comply with seven of the Design Guidelines specified in Section 5.3.13, and therefore is eligible for a bonus. GEI defers to the Planning Board whether a bonus provision is acceptable and if so, the number of bonus dwellings. (§5.3.5.2)
4. The lot areas of Lots 7 and 8 are 12,281 and 11,988 square feet, respectively, once 75% of the area under the wetland is excluded. A minimum of 12,500 square feet of lot area is required. (§2.1 – Minimum Lot Area & §5.3.6.b)
5. The open space parcel south of Lot 34 will be approximately 33 feet wide near the Road "C" right-of-way. The open space needs to be at least 40 feet wide if it provides access. GEI defers to the Planning Board whether the open space width of 33+/- feet is satisfactory. (§5.3.11.c)

Subdivision Rules & Regulations

Both Conventional and Flexible Development Plans

6. On Sheets 4 through 6 of the Conventional Development Plans and 4 through 7 of the Flexible Development Plans the scale bars show 1" = 40', however, the plotted scale of these plans is approximately 1" = 60'. The plans must be prepared at a scale of 1" = 40' and the scale bar must be consistent with the plotted scale. (§3.2.2)
7. The locus needs to have a north arrow. (§3.2.3.1)
8. The underground utilities (i.e. drainage and sewer) need to be included on the profile sheets. (§3.2.4.1.k)
9. Fire hydrants must be provided every 500 feet. On the Conventional Development Plans, spacing is greater than 500 feet on Road "B" between hydrants at

approximately Sta. 5+00 and 10+50. On the Flexible Development Plans, an inadequate number of hydrants is shown. On Road "A" only one hydrant is shown at approx. Sta. 0+20, and no hydrants are shown on Road "B." (§4.7.7.1)

10. There must be at least 50 feet between the side right-of-way lines of intersecting ways and a driveway. At the proposed Magnolia Lane intersection, the right-of-way line and edge-of-pavement cross over the abutter's driveway. Also, the proposed 474-foot contour line is shown within the existing driveway, indicating work within the driveway. Although the existing driveway is located within an existing roadway and grading easement, coordination will need to be made with the abutter regarding any proposed work. Nevertheless, alternatives should be considered to maximize separation between the abutter's driveway and the proposed roadway or to tie the existing driveway into the new road. (§4.3.3)
11. GEI reviewed the waiver requests and has no engineering-related issues with the requests. GEI understands that the Planning Board will address the waiver requests and is available to assist the Planning Board with its review.

Conventional Development Plans

12. A minimum K-value of 28 must be used for crest curves. The plans propose a crest curve K-value of 25.45 on Road "B" at approximately Sta. 3+40. (§4.1.5.3)
13. To promote safe vehicular travel, a curvilinear street layout is desired. Sections of Road "B" Between Stations 7+00 and 14+00 and Stations 16+00 and 22+00 have no curve and could promote increased vehicular speeds. If a Conventional Development Plan is to be pursued, the straightness of roadways should be minimized to the extent practicable. (§4.1.2.1.a)

Flexible Development Plans

14. A snow easement must be provided at the end of Road "B". (§4.1.6.8)

General Engineering Comments

Conventional and Flexible Development Plans

15. GEI reviewed the "Intersection Site (sic) Distance Analysis" (the Analysis) and has no issue with the information presented or the findings. Please understand, GEI is not a traffic engineering consultant; if the Planning Board so desires it could retain a traffic consultant to review the Analysis.
16. If a special permit is granted, then during definitive plan design the existing culvert at Road "A" station 4+20+/- will need to be evaluated. The exiting culvert consists of corrugated metal pipe; it's condition and hydraulic capacity will need to be considered – it may be prudent to replace the culvert. Furthermore, during my site visit I observed evidence of erosion near the top of the slope above the culvert on the project-side of the upland over the culvert. Although I observed water flowing from the project toward the MassPike, the erosion suggested that water impounds in the MassPike channel, overtops the ground above the culvert and discharges into the on-site wetland. To protect the integrity of the proposed road, during definitive plan design the design team should investigate whether water impounds on the MassPike property and overflows to the on-site wetland.

17. Based upon observations during my site visit, stormwater flows from the MassPike property onto the site at Road "A" station 5+10+/- . If a special permit is granted, then during definitive plan design a culvert will need to be provided.

General Comments

Conventional and Flexible Development Plans

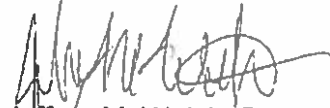
18. General Note 2 on Sheet 1 references Flood Insurance Rate Maps for the Town of Ashland. This note should be revised appropriately.
19. Retaining walls are shown within the right-of-way on Road "A" at approx. Sta. 15+00 and Road "B" at approx. Sta. 19+00. It is our understanding the Town of Grafton prefers to have retaining walls outside of the right-of-way in order to accommodate proposed or future underground utilities between the retaining wall and the roadway.
20. If not already done, the Planning Board may wish to solicit comments from the Grafton Sewer Department. GEI understands that the Sewer Department is striving to minimize the number of sewer pump stations in town. The Conventional Development Plans propose one pump station and the Flexible Development Plans propose two pump stations.

Conventional Development Plans

21. On Sheet 8, the profile in the top right corner is titled "Profile Road "A,"" however, this profile appears to be a profile for Road "B."

We trust this letter addresses your review requirements. Feel free to contact this office if you have any questions or comments.

Very truly yours,
GRAVES ENGINEERING, INC.



Jeffrey M. Walsh, P.E.
Principal

cc: Vito Colonna, P.E., Connorstone Engineering, Inc.